

AMENDMENT TO THE CLAIMS

1. (Currently Amended) An apparatus for conditioning gas prior to the use of the gas in a medical procedure involving a patient, the gas being received into the apparatus from an insufflator which receives gas from a gas source, and the gas exiting the apparatus being in flow communication with a means for delivering the gas to the interior of the patient, wherein the gas is pressure-and volumetric flow rate-controlled by the insufflator, the apparatus comprising:

a) a housing defining a chamber having an entry port and an exit port, the exit port adapted to be in flow communication with the means for delivering and the entry port adapted to be in flow communication with the insufflator; and

b) humidification means disposed within the chamber in the path of travel of the gas through the chamber for humidifying the gas as it travels through the chamber; and

c) a heating element disposed within the chamber for heating gas as it passes through the chamber; and

d) humidity sensing means disposed within the chamber for sensing the humidity of gas as it exits the chamber; and

e) monitoring means connected to the humidity sensing means for monitoring the humidity of the gas as it exits the chamber and indicating when the humidity of the gas exiting the chamber drops below a predetermined threshold by generation of a signal indicative thereof.

2. (Currently Amended) The apparatus of claim 1, further comprising a backup container for liquid and an access tube that couples the backup container to the housing to provide a supply of liquid to the humidification means.

3. (Previously Presented) The apparatus of claim 2, wherein the humidification means comprises at least one layer of liquid-retaining material capable of retaining a volume of liquid.

4. (Previously Presented) The apparatus of claim 3, wherein the at least one layer of liquid-retaining material is pre-charged with the volume of liquid.

5. (Previously Amended) The apparatus of claim 3, wherein the at least one layer of liquid retaining material is rechargeable with liquid.

8, 6. – 38 Cancelled

39. (Withdrawn) A method of, for any selected period of time, conditioning gas for delivery into a patient for a medical procedure comprising the steps of:

- a) directing a gas from a gas source into a chamber; and
- b) humidifying the gas within the chamber with a volume of liquid.

40. (Withdrawn) The method of claim 39, and further comprising steps of:

- c) sensing the humidity of the gas as it exits the chamber; and

- d) monitoring the humidity of the gas exiting the chamber.

41. (Withdrawn) The method of claim 40, wherein the step of monitoring comprises determining when the volume of liquid in the chamber requires replenishing based on the humidity of the gas in the chamber.

42. (Withdrawn) The method of claim 40, wherein the step of monitoring comprises determining when the relative humidity of the gas in the chamber drops below a relative humidity threshold.

43. (Withdrawn) The method of claim 40, and further comprising the step of generating an alarm when it is determined that the volume of liquid in the chamber requires replenishing.

44. (Withdrawn) The method of claim 43, and further comprising the step of recharging the chamber with liquid in response to the alarm.

45. (Withdrawn) The method of claim 43, wherein the alarm is continued until it is determined that the chamber has been replenished with liquid based on the humidity of the gas in the chamber

46. (Withdrawn) The method of claim 38, and further comprising the step of generating an alarm when it is determined that the humidity of the gas in the chamber drops

below a critical relative humidity threshold.

47. (Withdrawn) The method of claim 39, and further comprising the step of providing a continuous backup supply of liquid to the chamber.

48. (Withdrawn) The method of claim 39, and further comprising step of heating the gas within the chamber.

49. (Withdrawn) The method of claim 48, and further comprising the steps of sensing the temperature of the gas as it exits the chamber; and controlling electrical power to the heating element so as to regulate the temperature of the gas as it exits the chamber.

50. (Withdrawn) The method of claim 49, and further comprising the step of terminating electrical power to the heating element when it is determined that the humidity of the gas in the chamber drops below a critical relative humidity threshold.

51. (Withdrawn) The method of claim 48, wherein the step of humidifying and the step of heating are performed on the gas substantially simultaneously within the chamber.

52. (Withdrawn) The method of claim 51, wherein the step of sensing the humidity and sensing the temperature are performed in the flow path of the gas downstream from the steps of heating and humidifying in the chamber.

53. (Withdrawn) The method of claim 39, and further comprising the step of positioning the chamber immediately adjacent the patient.

54. (Withdrawn) The method of claim 39, and further comprising the step of filtering the gas prior to the step of humidifying.

55. – 71 Cancelled

72. (Previously Presented) The apparatus of claim 1, wherein the backup container hangs free of the housing.

73. (Previously Presented) The apparatus of claim 1, wherein the backup container is fastened to the apparatus.

74. (Previously Presented) The apparatus of claim 1, wherein the backup container is fastened to a tube segment leading from the insufflator to the entry port of the housing.

75. (Previously Presented) The apparatus of claim 1, and further comprising an extension tube that couples the access tube to the humidification means.

76. (Previously Presented) The apparatus of claim 1, wherein the humidity sensing means is positioned in the chamber in the flow path of the gas proximate the exit port of the housing.

77. (Previously Presented) The apparatus of claim 1, wherein the humidity sensing means is a humidity sensitive capacitor or a humidity sensitive resistor.

78. (Previously Presented) The apparatus of claim 1, wherein the monitoring means is responsive to a signal representing a capacitance or resistance of the humidity sensing means.

79. (Previously Presented) The apparatus of claim 1, wherein the monitoring means determines when the relative humidity of gas in the chamber drops below a relative humidity threshold and generates a signal in response thereto.

80. (Previously Presented) The apparatus of claim 1, wherein the monitoring circuit determines that the container in the humidification means requires recharging of liquid when the humidity of the gas in the chamber drops below a relative humidity threshold.

81. (Previously Presented) An apparatus for conditioning gas prior to the use of the gas in a medical procedure involving a patient, the gas being received into the apparatus from an insufflator which receives gas from a gas source, and the gas exiting the apparatus being in flow communication with a means for delivering the gas to the interior of the patient, wherein the gas is pressure-and volumetric flow rate-controlled by the insufflator, the apparatus comprising:

a) a housing defining a chamber having an entry port and an exit port, the exit port adapted to be in flow communication with the means for delivering and the entry port adapted to be in flow communication with the outlet of the insufflator; and

b) humidification means disposed within the chamber in the path of travel of the gas through the chamber for humidifying the gas as it travels through the chamber; and

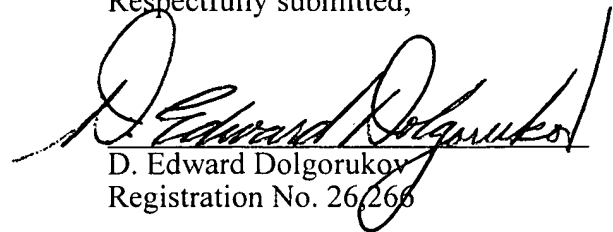
c) a heating element disposed within the chamber for heating gas as it passes through the chamber; and

d) a temperature sensor disposed in the chamber to sense the temperature of the gas as it exits the chamber; and

e) a control circuit connected to the temperature sensor and to the heating element, and responsive to the temperature sensor to control electrical power to the heating element so as to regulate the amount of heat applied by the heating element to the gas within the chamber, thereby maintaining the gas at a desired temperature or within a desired temperature range; and

f) a backup container for liquid and an access tube that couples the backup container to the housing to provide a supply of liquid to the humidification means.

Respectfully submitted,


D. Edward Dolgorukov
Registration No. 26,266

ATTORNEYS

MARSHALL & MELHORN, LLC
Four SeaGate, Eighth Floor
Toledo, Ohio 43604
(419) 249-7146
(419) 249-7151 Facsimile